

IN THE CLAIMS:

1. (currently amended): A method of improving the precision of acquired intensity ratio data, said method comprising the steps of:

a[[.]] causing at least one wavelength in an electromagnetic beam to enter a detector without first interacting with a sample system, ~~to-the-end~~ so that said detector produces a representative intensity signal;

b[[.]] causing said at least one wavelength in said electromagnetic beam to interact with a sample system and enter a detector selected from the group consisting of:

the same detector as in step a;

a different detector that that in step a;[[.]]

~~to-the-end~~ so that said detector produces a representative intensity signal;

c[[.]] causing said at least one wavelength in said electromagnetic beam to enter a detector selected from the group consisting of:

the same detector as in step a;

the same detector as in step b;

a different detector than those in steps a and b;

without first interacting with a sample system, ~~to-the-end~~ so that said detector produces a representative intensity signal;

d[[.]]] forming a ratio of the representative intensities provided in steps a and c and if it is not within a selected acceptable range of deviation from 1.0, repeating steps a, b and c until a data set consisting of representative intensities acquired in steps a, b and c is achieved which provides a ratio formed between the representative intensities provided in steps a and c that is within a selected acceptable range of deviation from, 1.0; and

e[[.]]] with [[a]] said data set achieved which provides that a ratio formed between the representative intensities provided in steps a and c is within a selected acceptable range of deviation from, 1.0, forming a ratio between the representative intensity provided in step b and that provided by step a or step c or a composite of said representative intensities provided in steps a and c.

2. (currently amended): A method of improving the precision of acquired intensity ratio data, said method comprising the steps of:

a[[.]]] providing beam of electromagnetism and causing it to be divided into first and second electromagnetic beams by a beam splitting means;

b[[.]]] causing at least one wavelength in said first electromagnetic beam to enter a first detector without first interacting with a sample system, ~~to-the-end~~ so that said first detector produces a representative intensity signal;

c[[.]]]1 simultaneously with step b causing said at least one wavelength in said second electromagnetic beam to enter a second detector without first interacting with a sample system, ~~to-the-end~~ so that said second detector produces a representative

intensity signal;

performing steps c2 and d in either order:

c[[1.]]₂ causing said at least one wavelength in said second electromagnetic beam to interact with a sample system and enter the same detector used in step c1 ~~to-the-end~~ so that said detector produces a representative intensity signal;

d[[.]] forming a ratio of the intensities provided in steps b and c1 and if it is not within a selected acceptable range of deviation from a determined expected value applying a calibration factor to intensity data obtained from the detector used in step b and/or c1;

e[[.]] with any calibration factor to intensity data applied, ~~with-a-data-set-achieved-which-provides-~~ so that a ratio formed between the intensities provided in steps b and c1 is within a selected acceptable range of deviation from a determined expected value, forming a ratio between the intensity provided in step c2 and that provided by step b or step c1 or a composite of said intensities provided in steps b and c1[[;]].

~~to-the-end-so-that-intensity-ratio-data-is-acquired;~~

~~said-method-then-optionally-further-involving-performing-steps f1,-f2-and-f3,-said-steps-f1,-f2-and-f3-being:~~

~~f1,-causing-at-least-one-wavelength-in-said-first electromagnetic-beam-to-enter-said-first-detector-without-first-interacting-with-a-sample-system,-to-the-end-that-said-first detector-produces-a-representative-intensity-signal;~~

f2--simultaneous-with-step-f1-causing-said-at-least-one-wavelength-in-said-second-electromagnetic-beam-to-enter-said-second-detector-without-first-interacting-with-a-sample-system;-to-the-end-that-said-second-detector-produces-a-representative-intensity-signal;-

f3--forming-a-ratio-of-the-intensities-provided-in-steps-f1-and-f2-and-if-it-is-not-within-a-selected-acceptable-range-of-deviation-from-a-determined-expected-value;-repeating-steps-a---e-

3. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[[.]]] providing a spectrophotometer system including a spectroscopic source of a beam of electromagnetic radiation and monochromator for allowing selecting of or scanning a range of wavelengths, a means for supporting a sample system, and a detector system; said spectrophotometer system being configurable such that a produced beam of electromagnetic radiation is caused to interact with said sample system and enter said detector system;

b1[[]] causing said monochrometer to scan a selected range of wavelengths while obtaining a first baseline reference intensity data set;

b2[[]] causing said monochrometer to scan said selected range of wavelengths while obtaining a sample system investigation intensity data set;

b3[[]] causing said monochrometer to scan said selected range of wavelengths while obtaining a second baseline reference intensity data set; and

c[[]] at selected wavelength(s) whereat wherein the ratio in said baseline reference intensity values obtained in steps b1 and b3 is within some selected range substantially near 1.0, utilizing baseline reference intensity data obtained in step b1 or b3 or a composite value of the step b1 and b3 baseline reference intensity data, to form a ratio with said sample system investigation intensity data obtained in b2; and

d[[]] identifying a wavelength at which the ratio of said baseline reference intensity values obtained in steps b1 and b3 is not within said selected range substantially near 1.0, and setting said monochrometer to pass said identified wavelength; then without changing said monochrometer setting obtaining:

d1[[]] first baseline reference intensity data;

d2[[]] sample system investigation intensity data;

d3[[]] second baseline reference intensity data; and

e[[]] utilizing first and second baseline reference intensity data obtained in step d1 or d3 or a composite value of the baseline reference intensity data obtained in step d1 and d3, and using said baseline reference intensity data obtained in step d1 or d3 or a composite value thereof to form a ratio with said sample system investigation intensity data obtained in d2 at wavelengths whereat wherein the ratio in said intensity values obtained in steps d1 and d3 is within some selected range substantially near 1.0[[]].

4. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 3, in which the step of providing a spectrophotometer system involves orienting the detector system to receive electromagnetic radiation which reflects from a sample system.

5. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 3, in which the step of providing a spectrophotometer system involves

orienting the detector system to receive electromagnetic radiation which transmits through a sample system.

6. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[.]] providing a spectrophotometer system including a spectroscopic source of a beam of electromagnetic radiation and monochrometer for allowing selecting of or scanning a range of wavelengths, a means for supporting a sample system, and a detector system; said spectrophotometer system being configurable such that a produced beam of electromagnetic radiation is caused to interact with said sample system and enter said detector system;

b1[.]] causing said monochrometer to scan a selected range of wavelengths while obtaining a first baseline reference intensity data set;

b2[.]] causing said monochrometer to scan said selected range of wavelengths while obtaining sample system investigation intensity data set;

b3[.]] causing said monochrometer to scan said selected range of wavelengths while obtaining a second baseline reference

intensity data set; and

c[[.]]] at selected wavelength(s) whereat wherein the ratio in said baseline reference intensity values obtained in steps b1 and b3 is within some selected range substantially near 1.0, utilizing baseline reference intensity data obtained in step b1 or b3, or a composite value of the baseline reference intensity data obtained in steps b1 and b3 as baseline reference intensity data, to form a ratio with said sample system investigation intensity data obtained in b2; and

d[[.]]] identifying a plurality of wavelengths at which the ratio in said baseline reference intensity values obtained in steps b1 and b3 is not within said selected range substantially near 1.0, and for each of at least two thereof:

d1[[.]]] causing said monochrometer to scan said at least two of said plurality of identified wavelengths while obtaining a first baseline reference intensity data set;

d2[[.]]] causing said monochrometer to scan said at least two of said plurality of identified wavelengths while obtaining a sample system investigation intensity data set;

d3[[.]]] causing said monochrometer to scan said at least two

of said plurality of identified wavelengths while obtaining a second baseline reference intensity data set;

e[[.]] for at least one of said at least two wavelengths utilizing first or second baseline reference intensity data obtained in step d1 or d3, or a composite value of the baseline reference intensity data obtained in steps d1 and d3 as a baseline reference intensity data, to form a ratio with said sample system investigation intensity data obtained in d2[[];]].

~~f--optionally-repeating-steps-[[d - e.]]~~

7. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 6, in which the step of providing a spectrophotometer system involves orienting the detector system to receive electromagnetic radiation which reflects from a sample system.

8. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 6, in which the step of providing a spectrophotometer system involves orienting the detector system to receive electromagnetic radiation which transmits through a sample system.

9. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method

comprising the steps of:

a[[]]] providing a spectrophotometer system including a spectroscopic source of a beam of electromagnetic radiation, a means for supporting a sample system, and a detector system; said spectrophotometer system being configurable such that a produced beam of electromagnetic radiation is caused to interact with said sample system and enter said detector system;

b[[]]] for each of a plurality of wavelengths obtaining, in any functional order, intensity data corresponding to:

b1[[]]] a first baseline reference intensity data;

b2[[]]] sample system investigation intensity data;

b3[[]]] a second baseline reference intensity data; and

c[[]]] repeating said step b to reacquire all data if at any selected wavelength(s) the ratio between the first and second baseline reference intensity data acquired in steps b1 and b3 is not within a selected range substantially near 1.0; and

d[[]]] ~~with-an-acceptable-set-of-intensity-data-secured,~~ at selected wavelength(s) utilizing said baseline reference

intensity data obtained in step b1 or b3 or a composite value of the baseline intensity values obtained in steps b1 and b3, forming a ratio with said sample system investigation intensity data obtained in step b2.

10. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 9, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which reflects from a sample system.

11. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 9, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which transmits through a sample system.

12. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[[.]] providing a spectrophotometer system including a spectroscopic source of a beam of electromagnetic radiation, a means for supporting a sample system, and a multiple element detector system; said spectrophotometer system being configurable

such that a produced beam of electromagnetic radiation is caused to interact with said sample system and enter said multiple element detector system;

b[[.]] for each of a plurality of wavelengths simultaneously obtaining, in any functional order, intensity data corresponding to:

b1[[.]] a first baseline reference intensity data;

b2[[.]] sample system investigation intensity data;

b3[[.]] a second baseline reference intensity data; and

c[[.]] repeating said step b to reacquire all data if at any selected wavelength(s) the ratio between the first and second baseline reference intensity data acquired in steps b1 and b3 is not within a selected range substantially near 1.0; and

d[[.]] with-an-acceptable-set-of-intensity-data-simultaneously secured, at selected wavelength(s) utilizing said baseline reference intensity data obtained in step b1 or b3 or a composite value of the baseline intensity values obtained in steps b1 and b3, to form a ratio with said sample system investigation intensity data obtained in step b2.

13. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 12, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which reflects from a sample system.

14. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 12, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which transmits through a sample system.

15. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[.]) providing a spectrophotometer system including a spectroscopic source of a beam of electromagnetic radiation, a means for supporting a sample system, and a detector system; said spectrophotometer system being configurable such that a produced beam of electromagnetic radiation is caused to interact with said sample system and enter said detector system;

b[.]) for each of a plurality of wavelengths obtaining, in

any functional order, intensity data corresponding to:

b1[[.]] first baseline reference intensity data;

b2[[.]] sample system investigation intensity data;

b3[[.]] second baseline reference intensity data; and

c[[.]] at selected wavelength(s) utilizing said baseline reference intensity data obtained in step b1 or b3 or a composite value formed said baseline intensity data obtained in steps b1 and b3, to form a ratio with said sample system investigation intensity data obtained in step b2 if a ratio between the first and second baseline reference intensity data acquired in steps b1 and b3 is within a selected range which is in a range substantially near 1.0; and

d[[.]] identifying at least one selected wavelength(s) whereat wherein the ratio between the first and second baseline reference intensity data acquired in steps b1 and b3 is not within a selected range substantially near 1.0, reacquiring baseline reference intensity data and sample system investigation intensity data and utilizing said reacquired baseline reference intensity data in forming a ratio with said reacquired sample system investigation intensity data.

16. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 15, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which reflects from a sample system.

17. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 15, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which transmits through a sample system.

18. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[[.]] providing a spectrophotometer system including a spectroscopic source of a beam of electromagnetic radiation, a means for supporting a sample system, and a multiple element detector system; said spectrophotometer system being configurable such that a produced beam of electromagnetic radiation is caused to interact with said sample system and enter said multiple element detector system;

b[[.]] for each of a plurality of wavelengths simultaneously obtaining, in any functional order, intensity data corresponding to:

b1[[.]] first baseline reference intensity data;

b2[[.]] sample system investigation intensity data;

b3[[.]] second baseline reference intensity data; and

c[[.]] at selected wavelength(s) utilizing said baseline reference intensity data obtained in step b1 or b3 or a composite value of the baseline reference intensity values obtained in steps b1 and b3, to form a ratio with said sample system investigation intensity data obtained in step b2 if a ratio between the first and second baseline reference intensity data acquired in steps b1 and b3 is within a selected range which is in a range substantially near 1.0; and

d[[.]] reacquiring baseline reference intensity data and sample system investigation intensity data at at least one selected wavelength(s) whereat wherein the ratio between the first and second baseline reference intensity data acquired in steps b1 and b3 is not within a selected range substantially near 1.0, and utilizing said reacquired baseline reference intensity data in forming a ratio with said reacquired sample system

investigation intensity data.

19. A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 18, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which reflects from a sample system.

20. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 18, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which transmits through a sample system.

21. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[[]] providing a spectrophotometer system including a spectroscopic source of a beam of spectroscopic electromagnetic radiation and monochrometer for allowing selecting of wavelengths, a beam splitter means, a means for providing a sample system and first and second detector systems; said spectrophotometer system being configurable such that a produced

beam of electromagnetic radiation is caused be split into two beams by said beam splitter means, one of said two beams being caused to either enter said first detector directly or interact with a sample system and then enter said first detector system; and the other of said two beams being caused to enter directly into said second detector;

b[[.]] setting said monochrometer to pass a selected wavelength; then without changing said monochrometer setting obtaining:

b1[[.]] baseline reference intensity data from said second detector; and

b2[[.]] obtaining, in either order, intensity data from said first detector both with a sample system present and for baseline reference with the sample system removed;

c[[.]] forming a ratio between the baseline intensity data obtained in step b1, and the intensity data obtained in step b2 which was obtained with the sample system removed, and

if a ratio between said baseline reference intensity data is within a selected range substantially near a determined expected value, using the baseline intensity data obtained in step b1, or the intensity data obtained in step b2 which was obtained with

the sample system removed, or a composite thereof to form a ratio with the intensity data obtained in step b2 which was obtained with the sample system present; but

if the ratio between the baseline intensity data obtained in step b1, and the intensity data obtained in step b2 which was obtained with the sample system removed is not within a selected range substantially near a determined expected value, then performing a selection from the group consisting of:

repeating steps b and c; and

applying a correction factor to the intensity data obtained from said second and/or first detector with the sample system removed in step b2;

~~to-the-end~~ so that the ratio between the baseline intensity data obtained in step b1, and the intensity data obtained in step b2 which was obtained with the sample system removed is within a selected range substantially near a determined expected value,

and then with any correction factor to the intensity data obtained from said second and/or first detector applied, forming a ratio between intensity data obtained in step b2 from said first detector obtained with a sample system present to baseline

intensity data obtained in step b1, or the intensity data obtained in step b2 which was obtained with the sample system removed, or a composite of the baseline intensity data obtained in step b1 and the intensity data obtained in step b2 which was obtained with the sample system removed;

said method further comprising steps d1, and d2-and-d3, wherein said steps d1, and d2 and-d3 are:

d1[[.]] without changing the monochrometer setting causing said set wavelength in said first electromagnetic beam to enter said first detector without first interacting with a sample system, to-the-end so that said first detector produces a representative intensity signal;

d[[1.]]2 simultaneous with step d1 causing said set wavelength in said second electromagnetic beam to enter said second detector without first interacting with a sample system, to-the-end so that said second detector produces a representative intensity signal[[;]].

~~d3--optionally-forming-a-ratio-of-the-intensities-provided-in steps-d1-and-d2-and-if-it-is-not-within-a-selected-acceptable-range-of-deviation-from-a-determined-expected-value-repeating steps-a---e--~~

22. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 21, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which reflects from a sample system.

23. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 21, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which transmits through a sample system.

24. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[[.]]] providing a spectrophotometer system including a spectroscopic source of a beam of spectroscopic electromagnetic radiation, a beam splitter means, a means for providing a sample system and first and second multi-element detector systems; said spectrophotometer system being configurable such that a produced beam of electromagnetic radiation is caused be split into two beams by said beam splitter means, one of said two beams being caused to either enter directly into said first multi-element detector or interact with a sample system and then enter said

first multi-element detector system; and the other of said two beams being caused to enter directly into said second multi-element detector;

b[[.]] for a plurality of wavelengths simultaneously obtaining:

b1[[.]] baseline reference intensity data from said second multi-element detector; and

b2[[.]] obtaining, in either order, intensity data from said first multi-element detector both with a sample system present and for baseline reference with the sample system removed;

c[[.]] at at least some wavelengths forming a ratio between the baseline intensity data obtained in step b1, and the intensity data obtained in step b2 which was obtained with the sample system removed, and

if, for a wavelength, a ratio between said baseline reference intensity data is within a selected range substantially near a determined expected value, using the baseline intensity data obtained in step b1, or the intensity data obtained in step b2

which was obtained with the sample system removed, or a composite formed from the baseline intensity data obtained in step b1 and the intensity data obtained in step b2 which was obtained with the sample system removed, to form a ratio with the intensity data obtained in step b2 which was obtained with the sample system present; but

if, for a wavelength, a ratio between the baseline intensity data obtained in step b1, and the intensity data obtained in step b2 which was obtained with the sample system removed is not within a selected range substantially near a determined expected value, then performing a selection from the group consisting of:

repeating steps b and c; and

applying a correction factor to the intensity data obtained from said second and/or first detector with the sample system removed in steps b1 and b2 respectively;

to-the-end so that the ratio between the baseline intensity data obtained in step b1, and the intensity data obtained in step b2 which was obtained with the sample system removed is within a selected range substantially near a determined expected value;

and then with any correction factor to the intensity data obtained from said second and/or first detector applied, forming

a ratio between resulting intensity data related to step b2 from said first detector obtained with a sample system present to the baseline intensity data obtained in step b1, or the intensity data obtained in step b2 which was obtained with the sample system removed, or a composite of the baseline intensity data obtained in step b1 and the intensity data obtained in step b2 which was obtained with the sample system removed, with any required calibration factor being applied to the intensity data obtained from said second or first detector with the sample system removed in steps b1 and b2;

to-the-end so that intensity ratio data is acquired;

said method further comprising steps d1, and d2 ~~and-d3~~, wherein said steps d1, d2 ~~and-d3~~ are:

d1[~~(.)~~] causing at least one wavelength in said first electromagnetic beam to enter said first detector without first interacting with a sample system, to-the-end so that said first detector produces a representative intensity signal;

d[~~(1.)~~]2) simultaneous with step d1 causing said at least one wavelength in said second electromagnetic beam to enter said second detector without first interacting with a sample system, to-the-end so that said second detector produces a representative

intensity signal[[;]]_

~~d3--optionlly at-said-at-least-one-wavelength-forming-a-ratio-
of-the-intensities-provided-in-steps-d1-and-d2-and-if-it-is-not-
within-a_selected-acceptable-range-of-deviation-from-a-
determined-expected_value-repeating-steps-a---e-for-at-least-
said-at-least-one-wavelength-~~

25. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 24, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which reflects from a sample system.

26. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 24, in which the step of providing a spectrophotometer system involves orienting the multiple element detector system to receive electromagnetic radiation which transmits through a sample system.

27. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[[.]]_ providing a spectrophotometer system including a

spectroscopic source of single a beam of electromagnetic radiation and monochrometer for allowing selecting of wavelengths, a means for supporting a sample system and a detector system; said spectrophotometer system being configurable such that a single produced beam of electromagnetic radiation is caused to impinge upon a reference surface of a sample system placed on said means for supporting a sample system at an oblique angle thereto and enter said detector system;

b[[.]]] setting said monochrometer to pass a selected wavelength; then without changing said monochrometer setting obtaining, in any functional order:

b1[[.]]] baseline reference intensity data; and

b2[[.]]] sample system investigation intensity data;

c[[.]]] utilizing said baseline reference intensity data to form a ratio with said sample system investigation intensity data[[;]]_

d) optionally repeating said steps b and c for different monochrometer settings.

28. (original): A method of improving the precision of acquired

spectrophotometer intensity ratio data as in Claim 27, in which the step of providing a spectrophotometer system involves orienting the detector system to receive electromagnetic radiation which reflects from said sample system at said oblique angle.

29. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 27, in which the step of providing a spectrophotometer system involves orienting the detector system to receive electromagnetic radiation which transmits through said sample system at said oblique angle.

30. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[[.]] providing a spectrophotometer system including a spectroscopic source of a beam of electromagnetic radiation and a monochromator for allowing selecting of wavelengths, a means for supporting a sample system and a detector system; said spectrophotometer system being configurable such that a produced beam of electromagnetic radiation is caused to impinge upon a reference surface of a sample system placed on said means for supporting a sample system at an oblique angle thereto, and enter said detector system;

b[[.]]] setting said monochrometer to pass a selected wavelength; then without changing said monochrometer setting obtaining, in any functional order:

b1[[.]]] a first baseline reference intensity data;

b2[[.]]] sample system investigation intensity data;

b3[[.]]] a second baseline reference intensity data; and

c[[.]]] utilizing said baseline reference intensity data obtained in step b1 or b3, or a composite value of the baseline reference intensity values obtained in steps b1 and b3, to form a ratio with said sample system investigation intensity data obtained in step b2[[;]]].

d. ~~optionally repeating said steps b and c for different monochrometer settings.~~

31. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 30, in which the step of providing a spectrophotometer system involves orienting the detector system to receive electromagnetic radiation which reflects from said sample system at said oblique

angle.

32. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 30, in which the step of providing a spectrophotometer system involves orienting the detector system to receive electromagnetic radiation which transmits through said sample system at said oblique angle.

33. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[[.]] providing a spectrophotometer system including a spectroscopic source of a beam of electromagnetic radiation and monochromator for allowing selecting of wavelengths, a means for supporting a sample system and a multi-element detector system; said spectrophotometer system being configurable such that a produced beam of electromagnetic radiation is caused to impinge upon a reference surface of a sample system placed on said means for supporting a sample system at an oblique angle thereto and enter said multi-element detector system;

b[[.]] for a plurality of wavelengths, simultaneously obtaining, in any functional order:

b1[[.]] baseline reference intensity data; and

b2[[.]] sample system investigation intensity data;

c[[.]] at at least one wavelength utilizing said baseline reference intensity data to form a ratio with corresponding sample system investigation intensity data[[;]]_

~~d--repeating-said-steps-b-and-c-for-different-wavelength(s)--~~

34. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 33, in which the step of providing a spectrophotometer system involves orienting the detector system to receive electromagnetic radiation which reflects from said sample system at said oblique angle.

35. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 33, in which the step of providing a spectrophotometer system involves orienting the detector system to receive electromagnetic radiation which transmits through said sample system at said oblique angle.

36. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data, said method comprising the steps of:

a[.]] providing a spectrophotometer system including a spectroscopic source of a beam of electromagnetic radiation, a means for supporting a sample system and a multi-element detector system; said spectrophotometer system being configurable such that a produced beam of electromagnetic radiation is caused to impinge upon a reference sample system placed on said means for supporting a sample system at an oblique angle thereto, and enter said multi-element detector system;

b[.]] for a plurality of wavelengths, simultaneously obtaining, in any functional order:

b1[.]] a first baseline reference intensity data;

b2[.]] sample system investigation intensity data;

b3[.]] a second baseline reference intensity data; and

c[.]] at at least one wavelength utilizing said baseline reference intensity data obtained in step b1 or b3, or a composite value of the baseline reference intensity values

obtained in steps b1 and b3, to form a ratio with corresponding said sample system investigation intensity data obtained in step b2[[]].

~~d--optionally-repeating-said-steps-b-and-c-for-different wavelength(s)-~~

37. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 36, in which the step of providing a spectrophotometer system involves orienting the multi-element detector system to receive electromagnetic radiation which reflects from said sample system at said oblique angle.

38. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 36, in which the step of providing a spectrophotometer system involves orienting the multi-element detector system to receive electromagnetic radiation which transmits through said sample system at said oblique angle.

39. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 1, in which further comprises the step of providing-a-spectrophotometer system-involves orienting the at least one detector system to receive electromagnetic radiation which reflects from a sample

system.

40. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 1, in which further comprises the step of providing-a-spectrophotometer system-involves orienting the at least one detector system to receive electromagnetic radiation which transmits through a sample system.

41. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 2, in which further comprises the step of providing-a-spectrophotometer system-involves orienting the at least one detector system to receive electromagnetic radiation which reflects from a sample system.

42. (currently amended): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 2, in which further comprises the step of providing-a-spectrophotometer system-involves orienting the at least one detector system to receive electromagnetic radiation which transmits through a sample system.

43. (original): A method of improving the precision of acquired intensity ratio data as in Claim 2, in which the determined expected value is 1.0.

44. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 21, wherein the baseline reference intensities obtained in steps b1 and b2 are obtained simultaneously.

45. (original): A method of improving the precision of acquired spectrophotometer intensity ratio data as in Claim 24, wherein the baseline reference intensities obtained in steps b1 and b2 are obtained simultaneously.

46. (new): A method as in Claim 2 which further comprises performing steps f1, f2 and f3, said steps f1, f2 and f3 being:

f1) causing at least one wavelength in said first electromagnetic beam to enter said first detector without first interacting with a sample system, so that said first detector produces a representative intensity signal;

f2) simultaneous with step f1 causing said at least one wavelength in said second electromagnetic beam to enter said second detector without first interacting with a sample system, so that said second detector produces a representative intensity signal;

f3) forming a ratio of the intensities provided in steps f1 and

f2 and if it is not within a selected acceptable range of deviation from a determined expected value, repeating steps a - e.

47. (new): A method as in Claim 3 which further comprises performing step f, said step f being:

f. repeating steps d and e for additional wavelength(s) at which the ratio in said intensity values obtained in steps b1 and b3 is not within said selected range substantially near 1.0.

48. (new): A method as in Claim 6 which further comprises performing step f, said step f being:

f) repeating steps d - e.

49. (new): A method as in Claim 21 which further comprises performing step d3, said step d3 being:

d3) forming a ratio of the intensities provided in steps d1 and d2 and if it is not within a selected acceptable range of deviation from a determined expected value repeating steps a - c.

50. (new): A method as in Claim 24 which further comprises performing step d3, said step d3 being:

d3) at said at least one wavelength forming a ratio of the intensities provided in steps d1 and d2 and if it is not within a selected acceptable range of deviation from a determined expected value repeating steps a - c for at least said at least one wavelength.

51. (new): A method as in Claim 27 which further comprises performing step d, said step d being:

d) repeating said steps b and c for different monochrometer settings.

52. (new): A method as in Claim 30 which further comprises performing step d, said step d being:

d) repeating said steps b and c for different monochrometer settings.

53. (new): A method as in Claim 33 which further comprises performing step d, said step d being:

d) repeating said steps b and c for different wavelength(s).

54. (new): A method as in Claim 36 which further comprises performing step d, said step d being:

d) repeating said steps b and c for different wavelength(s).

DISCUSSION

As regards Claims 1 - 26 and 30 - 45, it is believed that the Examiner's points have been addressed and overcome via Amendments to said Claims.

Further, Claim 27 is Amended to recite a "Single Beam". The Patent to George 3,986,776 describes a Dual Beam Spectrophotometer, (see second line of Abstract thereof for instance). Buermann et al. does not describe use of a Monochromater.

Claim 27 is also Amended to now require repeating the steps b1, b2 abd c at different wavelengths. While the Examiner has cited relevant references it is believed that the sequence of steps in Claim 27 is not taught except in the present Application Specification. And as the Examiner is aware, in view of the teaching in Graham v. John Deere Co. an Applicant's Application can not be used as a teaching reference. Many Cases could, of course be cited, but a quote from ATD Corp. v. Lydall, Inc. 159 F.3rd 534, 48 USPQ2d 1321 (Fed Cir. 1998) suffices to make the point, said quote being:

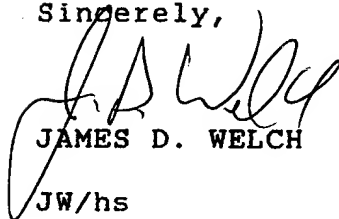
"Determination of obviousness can not be based on the

hindsight combination of components selectively culled from the prior art to fit the parameters of the invention".

To expand, Patent Application Examination can not be conducted in hindsight using the Applicant's Specification and Claims as the teachings to guide the seeking out of elements missing in a primary reference. There must be teachings in "a" prior art reference which teach what elements to seek out and how to modify and combine said elements found in other references, to arrive at the Claimed invention. The simple existence of elements in other references which arguably could be modified and combined to arrive at a new invention is not sufficient to make a new invention obvious in the absence of instructive guiding insight in "a" reference. The Examiner has identified various elements in three Patents, and basically argued that it would be obvious to select certain thereof, while rejecting others thereof, and then modify and combine the selected elements to arrive at the invention of Claims 27 - 30. But nothing in any of said references directs the procedure by which the desired elements are selected, modified and combined, while rejecting the other elements present.

It is now believed that all Pending Claims 1 - 54 are in order for Allowance, and the Examiner is therefore respectfully requested to provide Notice of Allowance. Should problems remain, please contact Attorney Welch who is receptive to Examiner suggestion and Amendment.

Sincerely,

A handwritten signature in dark ink, appearing to read 'J.D. Welch', is written over the typed name. The signature is fluid and cursive, with the first and last names being more prominent.

JAMES D. WELCH

JW/hs

enc. check for \$81.00.